

**COGENT**

**International Coconut Genetic Resources Network**

Alexia PRADES, COGENT coordinator

07-11 July 2014 - APCC COCOTECH Meeting



# Who are we?



# A Network of Countries



- 39 country members, coconut producing countries
- 24 national genebanks
- 5 International Coconut Genebanks (ICG) in 5 sub-regional networks



# Coconut producing countries and genebank location







# Who are we?

**Creation in 1992:** the CGIAR decided to include coconut in its research portfolio and COGENT is created and will stand under the supervision of Bioversity International



Year	COGENT Coordinators
1993	Mr. G. Santos and Dr. M. de Nucé de Lamothe
1994-2005	Dr. Ponciano A. Batugal
2005-2009	Dr. Maria Luz George
2009-2011	Dr. Stephan Weise
2011-2014	Dr. Roland Bourdeix
2014	Dr. Alexia Prades





# What do we do?



# Our goal

To develop and implement  
an international mechanism to coordinate  
research activities of global significance  
particularly in germplasm exploration,  
collecting, conservation and enhancement



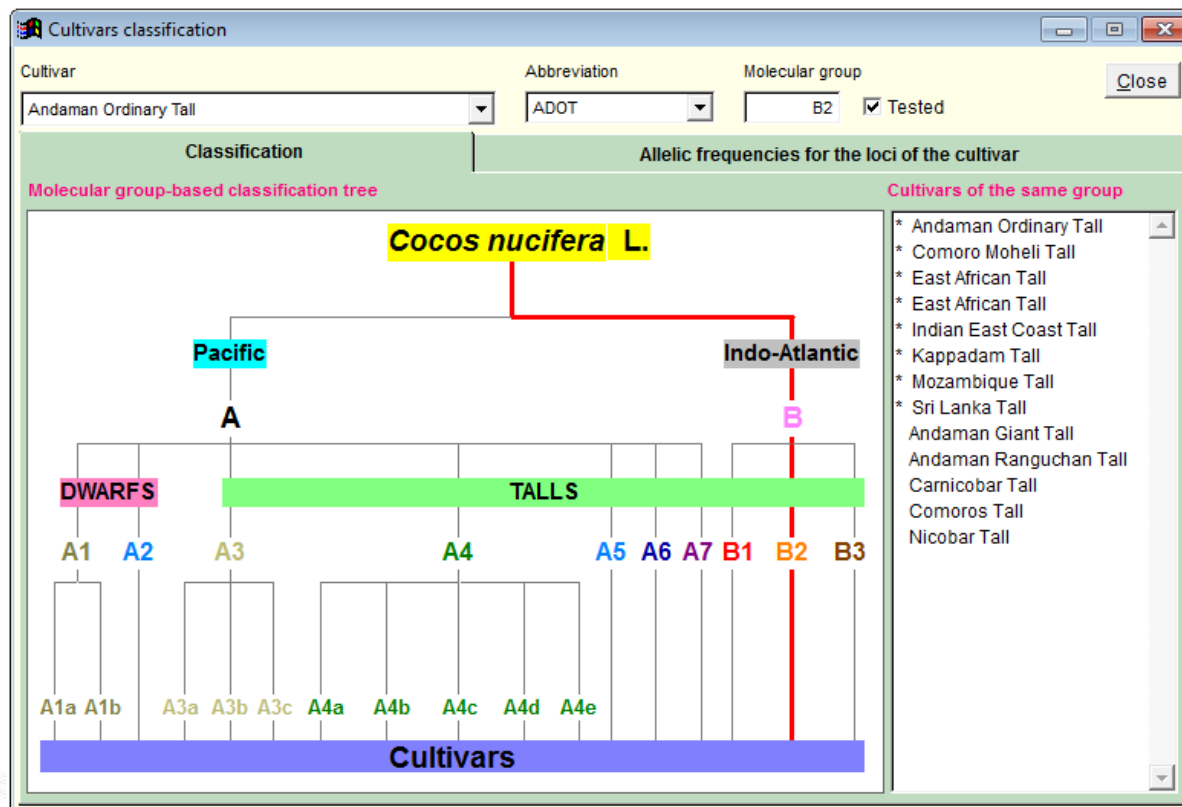
# Our main activities

- Encourage the protection and use of existing germplasm collections
- Identify and secure threatened diversity
- Promote greater collaboration among research groups
- Conduct appropriate training, disseminate information and secure necessary funding for network activities
- Establish and maintain an international database on existing and future collections



# Genebank database

- CGRD developed by CIRAD for COGENT



[www.cogentnetwork.org](http://www.cogentnetwork.org)



# Examples of past and on going projects

- **Regeneration** of accessions in the International Coconut Genebank for Africa and the Indian Ocean
- Validation of a **coconut embryo culture protocol** for the international exchange of germplasm
- Establishment of the **International Coconut Genebank** for South America and the Caribbean
- Development of **cryopreservation protocols** for cryobanking of coconut embryo

# Some of our partners





# What's next?



# The Global Strategy for better conservation and use of coconut genetic resources

Seven main objectives:

1. **Strengthen commitment** to better conservation and use of coconut genetic resources
2. **Ensure sustainable *ex situ* coconut genetic resources conservation**
3. **Assess coconut genetic diversity**, identify critical gaps in *ex situ* collections, and implement collecting missions
4. **Strengthen *in situ* conservation** and ensure that high quality planting material is equitably available and used
5. **Develop policies, mechanisms, capacities and resources** for safe international germplasm movement
6. **Enhance coconut germplasm use** by more effective/comprehensive germplasm characterization and evaluation
7. **Reinforce COGENT** as a global platform serving Strategy implementation.



# 17<sup>th</sup> Steering Committee Meeting at Coconut Research Institute, Lunuwila

COGENT gives the opportunity to  
**build international projects**  
in the most efficient way, and is the only way to  
get a global appraisal of coconut conservation







**cirad**

AGRICULTURAL RESEARCH  
FOR DEVELOPMENT

**Working  
together for  
tomorrow's  
agriculture**

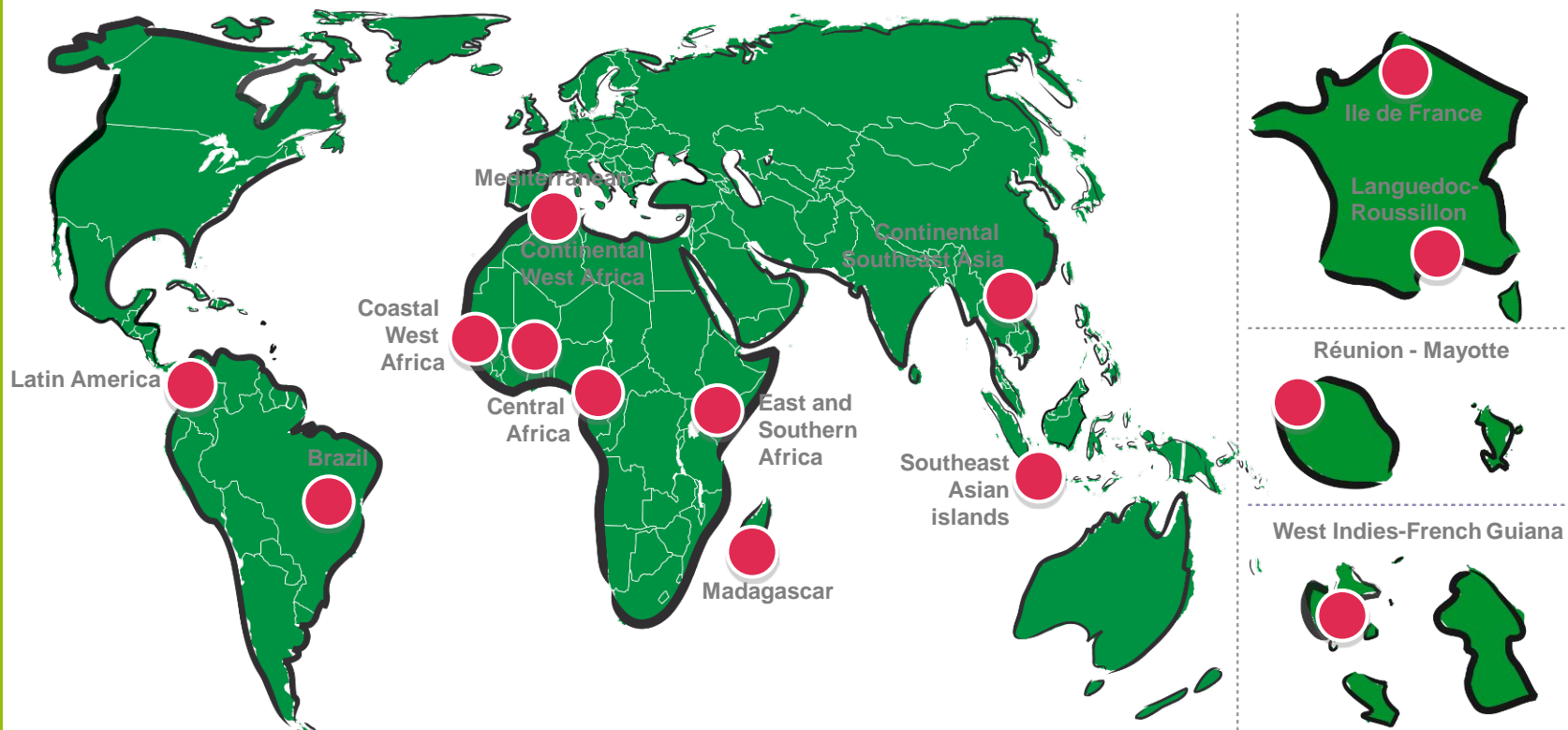
# An original research organization

- National public institution status, but a global mission
- Targeted research for development
- Based on 50 years' experience in the field combined to an original approach



# CIRAD worldwide

12 regional offices in the French overseas regions and abroad



A scientific hub in Montpellier

700 staff members based outside metropolitan France

# One main operating principle: research in partnership

- Working together to establish and implement priorities
- Working in the South, where our partners are, in their laboratories or in their fields
- Building scientific capacity





# Training the talents of the future: the need to link research and higher education



More than **300** PhD students supervised each year, **60 %** of them from the South



**800** researchers and technicians received and trained each year



International Masters courses run with *grandes écoles* and universities

## CIRAD and coconut sector

- Breeding, genomics (L. Baudouin, R. Bourdeix, JP Labouisse)
- Agronomy (X. Bonneau, J. Ollivier)
- LYTS (M. Dollet, F. Pilet)
- Biofuel (A. Liennard, G. Vaitilingom)
- Coconut wood (H. Baillères)
- Coconut processing and products quality (A. Prades)
- Carbon sequestration (O. Roupsard)
- Entomology (L. Ollivier)
- GIS (G. Coppens)



## Coconut water preparation



Morphometric  
analyses



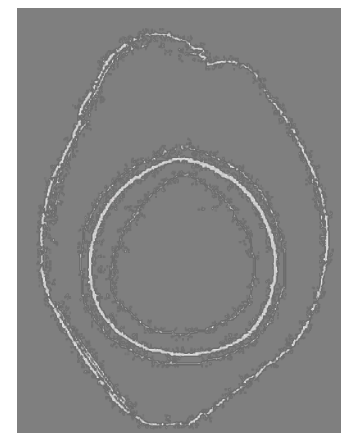
Kernel preparation



**CIRAD**  
Laboratory/  
Analyses

Partners: **Vanuatu** (CARFV), **Ivory Coast** (CNRA,  
University of Cocody)

# Computer Coconut Digital Image Analysis



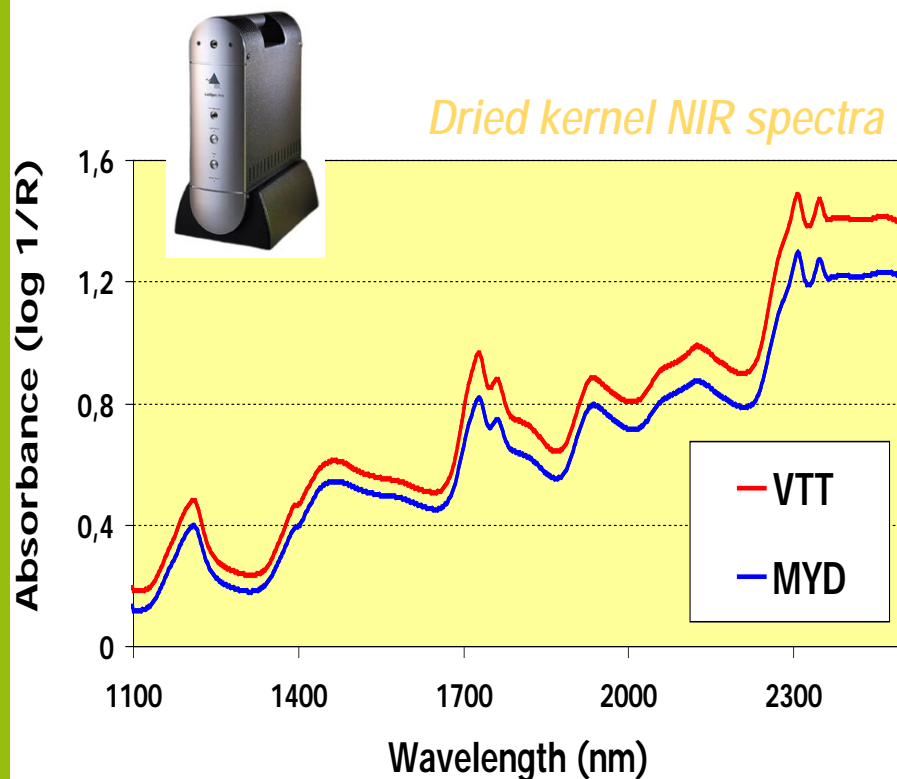
Coconut global Shape and Volume	
Meat & Cavity Shape	
Husk, Shell and Meat Thickness...	

Sheet 1

Sheet 2

Total duration of analysis = less than 1 min/picture

# Near Infra-Red Spectroscopy (NIRS)



Database and calibration



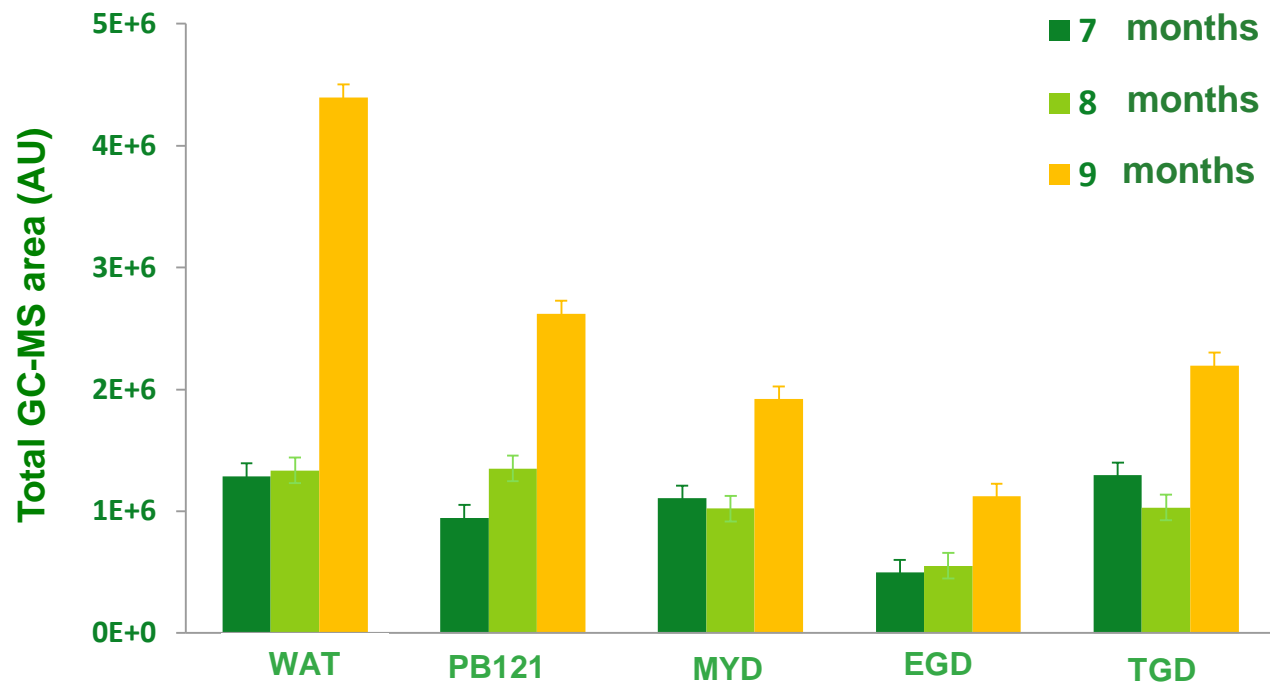
- Moisture content
- Fat Content
- Protein Content
- Carbohydrates content...



**Total duration  
of analysis =  
5 min.**

# Impact of Variety and Stage of Maturity on CW volatile compounds

55 components detected / 41 identified  
Ketones, alcohols, aldehydes, acids, esters, lactones...



# Vegetable oils as fuel for boats...Science fiction?



No, it's running now in South of France !

With canola and sunflower oil





Thank you

